

Program Notice

FGIS-PN-06-03

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NIRT WET GLUTEN PROGRAM

1. PURPOSE

The Grain Inspection, Packers and Stockyards Administration (GIPSA) is extending applications for the Near-infrared Transmittance (NIRT) technology currently approved for use in official inspection to include the determination of wet gluten in Hard Red Winter (HRW) and Hard Red Spring (HRS) wheat. GIPSA will begin providing wet gluten content determination in hard red wheat as official criteria under the authority of the United States Grain Standards Act (USGSA), effective May 1, 2006. Wet Gluten testing service will be provided **upon the request of an applicant for service** as a separate service, or in conjunction with other (e.g., protein, grade) inspection services.

2. BACKGROUND

Gluten is the primary functional protein in wheat, and it is responsible for the unique ability of milled wheat to produce bread, pasta, and noodle products. Extensive research has shown that wet gluten content is highly correlated to the total crude protein content for hard red wheat. GIPSA utilized this correlation to develop a protein-based equation for predicting wet gluten content, on a 14 percent flour moisture basis, applicable to HRW wheat and HRS wheat. GIPSA believes offering wet gluten testing will facilitate the marketing of wheat.

3. REQUIREMENTS

Wet gluten may be determined by either of two methods. The first is by manually solving the equation using the NIRT (shown to 0.01 percent) protein result:

$$\begin{aligned} &\text{Wet gluten (14 percent mb)} \\ &= \text{Official protein (12 percent mb)} \times 3.029 - 7.83 \end{aligned}$$

For example: a sample with an NIRT wheat protein of 12.79 percent would have a wet gluten content of 30.9 percent. $\text{Official protein (12.79 percent)} \times 3.029 - 7.83 = 30.91$, rounded to 30.9 percent.

The second method is to have the calibration model installed on the official NIRT instrument so that the wet gluten percentage is displayed directly on the instrument display. The official wet gluten calibration will be packaged with the Foss global wheat protein calibration and distributed by GIPSA, Technical Services Division (TSD), to those official testing locations which have purchased the Foss calibration diskette "Small Grain F" (Foss part number 10014260).

NIRT instrument and software requirements to use the wet gluten calibration are the same as those for the wheat protein calibration. There is no separate Standard Reference Sample (SRS) requirement for wet gluten. Updated wheat protein bias worksheets, incorporating wet gluten, will be distributed with the calibration diskette. Program monitoring will be in accordance with the NIRT Program Handbook, Chapter 5.

4. SAMPLE TESTING AND CERTIFICATION OF RESULTS

- a. NIRT wet gluten testing is determined on a representative sample portion meeting the same requirements as for official protein.
- b. Official sample-lot and submitted samples of wheat are tested and certified for wet gluten in conjunction with official protein and grade determinations or as a separate testing service.
- c. Wet gluten results are determined on a 14 percent moisture basis (only) and are reported on the work record and certificate to the nearest 0.1 percent. Upon request of the applicant for service, official criteria results may be stated on letterhead stationery in lieu of an official certificate, or protein and wet gluten results may be shown on two separate certificates.
- d. Show the official results on the inspection certificate using an approved statement as shown below:

“Wet gluten _____ %, 14% moisture basis”

- e. Review inspection services are available for wet gluten testing. Review inspection results replace the previous (e.g., original, reinspection) results.

5. DATA COLLECTION

- a. CuSum: Agricultural Commodity Graders will report results of the wet gluten determination in the CuSum loading logs. Personnel responsible for entering data in CuSum will add a field identified as WG, and will enter the wet gluten value to the nearest tenth of a percent.
- b. GIWIS: The number of wet gluten determinations will be reported on the Inspection and Weighing Report form (FGIS-922), in accordance with the instructions in the Grain Inspection Handbook, Book IV, Chapter 4.

- c. EGIS: Field office and agency managers will report wet gluten results on form FGIS-938, in accordance with the instructions in the Grain Inspection Handbook, Book IV, Chapter 4.

6. FEES FOR SERVICE

Because the wet gluten determination is processed concurrently with official wheat protein content, no additional fee will be assessed for this service. NIRT testing of wheat protein is billed at a rate of \$2.25 per sample, when performed at the applicant's facility, or \$10.00 per sample when the test is performed on a submitted sample or is obtained from a source other than a customer that has an GIPSA lab onsite.

7. SUMMARY

Upon the request of an applicant, official inspection personnel will determine wet gluten content in HRW or HRS wheat under the authority of the United States Grain Standards Act (USGSA) as official criteria. Results will be provided on a 14 percent moisture basis.

8. FILING INSTRUCTIONS

File a copy of this program notice with the NIRT Handbook until it is revised to incorporate these changes.

9. QUESTIONS

Direct any questions concerning Wet Gluten implementation procedures to Mark Leppert, Quality System and Services Unit (QSS), TSD, (816) 891-0433; or email at mark.leppert@usda.gov

/s/ John Giler

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Field Management Division